

Four New Species of the Ant Genus *Ponera* Latreille (Hymenoptera: Formicidae) from Yunnan, China

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Abstract: Four new species of the ant genus *Ponera* Latreille are described from the Gaoligongshan Mountain Nature Reserve of Yunnan Province. Up to date, 12 species of the genus are recorded in China, i.e. *P. sinensis* Wheeler, *P. alisana* Terayama, *P. chiponensis* Terayama, *Ponera pentodontos* Xu, *Ponera menglana* Xu, *Ponera nangong-shana* Xu, *Ponera longlina* Xu, *Ponera baka* Xu, *Ponera xantha*, sp. nov., *Ponera pinmana*, sp. nov., *Ponera bawana*, sp. nov., *Ponera diodontia*, sp. nov. A key to 12 species in China based on worker caste with figures is provided. All the type specimens are deposited in the Insect Collection, Southwest Forestry College.

Key words: Hymenoptera; Formicidae; *Ponera*; new species; systematics; Yunnan

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The ant genus *Ponera* Latreille is distributed in Holarctic, Oriental, Indo-Australian and Australasian regions. According to Bolton (1995), 37 valid species of the genus were recorded in the world. Twenty-seven species were known in East Asia and Southeast Asia. Taylor (1967) had a monographic revision of the genus, 28 living and 1 extinct species were treated. The *Ponera* species are usually small and living exclusively in the soil. According to the taxonomic and distributional data, the *Ponera* species have distinct geographical division, local species group is often observed in a certain place, such as in Japanese Islands, Taiwan Island, Philippines Islands, New Guinea Islands. In China, even the species group of western Yunnan is different from that of southern Yunnan.

Wheeler (1928) firstly described 2 species of *Ponera* in China: *P. sinensis* from Hong Kong and *P. excoecata* from Taipo, but the latter was moved in *Hypoconera* Santschi by Ogata in 1987. Terayama (1986) recorded 2 species of *Ponera* from Taiwan Province, i.e. *P. alisana* and *P. chiponensis*. Xu (2001) had a systematic study on the genus of China and 5 new species were described from Xishuangbanna Nature Reserve in southern Yunnan Province. In this study, 4 new species are described from Gaoligongshan Mountain Nature

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Reserve in western Yunnan Province. Up to date, 12 species of the genus are known in China.

Standard measurements and indices are as defined by Taylor (1967): TL-Total length, HL-Head length, HW-Head width, CI-Cephalic index = $HW \times 100 / HL$, SL-Scape length, SI-Scape index = $SL \times 100 / HW$, PW-Pronotum width, AL-Alitrunk length, ED-Maximum diameter of eye, ML-Mandible length, PNL-Petiolar node length, DPW-Dorsal petiole width, PH-Petiole height, PNI-Petiolar node index = $DPW \times 100 / PW$, LPI-Lateral petiolar index = $PNL \times 100 / PH$. All measurements are expressed in millimeters.

The type specimens are deposited in the Insect Collection, Southwest Forestry College.

Genus *Ponera* Latreille

Ponera Latreille, 1804, *Nouv. Dict. Hist. Nat.*, 24: 179. Type-species: *Formica coarctata* Latreille, by subsequent designation of Westwood, 1840:83.

Key to Chinese species of *Ponera* based on worker caste

1. In dorsal view, anterior and lateral borders of petiolar node not formed a single arch, the two borders separated by a roundly prominent corner 2
 In dorsal view, anterior and lateral borders of petiolar node formed a single arch, the two borders not separated by a roundly prominent corner 5
2. In profile view, petiolar node rectangular, with anterior and posterior faces parallel 3
 In profile view, petiolar node trapezoid, with anterior and posterior faces not parallel 4
3. Anterior margin of clypeus with a distinct blunt median tooth. Apex of scape surpassed occipital corner by about 1/12 of its length. Subpetiolar process with a large posteroventral tooth (Figs. 1~3) (China; Taiwan Province) *P. alisana* Terayama
 Anterior margin of clypeus without a median tooth. Apex of scape failed to reach occipital corner by about 1/10 of its length. Subpetiolar process without posteroventral tooth (Figs. 4~6) (China; Yunnan Province) *P. nangongshana* Xu
4. Head distinctly narrowed forward. Anterior margin of clypeus with a weak median tooth. Subpetiolar process with large fenestra and a large posteroventral tooth (Figs. 7~9) (China; Taiwan Province) *P. chiponensis* Terayama
 Head not distinctly narrowed forward. Anterior margin of clypeus without a median tooth. Subpetiolar process with small fenestra and a minute posteroventral tooth (Figs. 10~12) (China; Yunnan Province) *P. baka* Xu
5. In dorsal view, petiolar node very thick, roughly triangular, length / width much more than 1/2 (Figs. 13~15) (China; Yunnan Province) *P. xantha*, sp. nov.
 In dorsal view, petiolar node relatively thin, roughly semicircular or crescent, length / width equal to or less than 1/2 6
6. Mandible with 5 subequal large teeth (Figs. 16~18) (China; Yunnan Province) *P. pentadontos* Xu
 Mandible with 3 enlarged apical teeth followed by a row of small to minute denticles 7
7. In profile view, posteroventral border of subpetiolar process without acute tooth, at most bluntly angled 8
 In profile view, posteroventral border of subpetiolar process with an acute tooth 9
8. Head much longer than broad, CI 80. Anterior margin of clypeus bluntly angled. In profile view, petiolar node with anterodorsal corner as high as posterodorsal corner. In dorsal view, petiolar node semicircular, with posterior border straight (Figs. 19~21) (China; Yunnan Province) *P. bawana*, sp. nov.

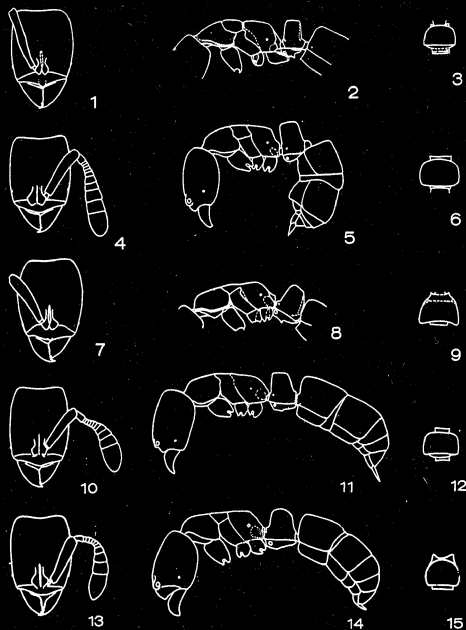
- Head broader, CI 89. Anterior margin of clypeus roundly convex. In profile view, petiolar node with high anterodorsal corner, posterodorsal corner indistinct. In dorsal view, petiolar node crescent, with posterior border concave (Figs. 22~24) (China; Yunnan Province) *P. menglana* Xu
9. In profile view, petiolar node weakly narrowed upward, posteroventral border of subpetiolar process with 2 teeth. In dorsal view, petiolar node semicircular, with posterior border straight (Figs. 25~27) (China; Yunnan Province) *P. diodonta*, sp. nov.
- In profile view, petiolar node distinctly narrowed upward, posteroventral border of subpetiolar process with 1 tooth. In dorsal view, petiolar node crescent, with posterior border concave 10
10. In profile view, petiolar node roughly triangular, posterodorsal corner indistinct (Figs. 28~30) (China; Hong Kong) *P. sinensis* Wheeler
- In profile view, petiolar node roughly trapezoid, posterodorsal corner roundly prominent 11
11. Head roughly rectangular, distinctly longer than broad, with CI 77. Antennal club with 5 segments (Figs. 31~33) (China; Yunnan Province) *P. pianmana*, sp. nov.
- Head roughly square, slightly longer than broad, with CI 90. Antennal club with 4 segments (Figs. 34~36) (China; Yunnan Province) *P. longlina* Xu

1. *Ponera xantha*, sp. nov. (Figs. 13~15)

Holotype worker: TL 1.9, HL 0.45, HW 0.35, CI 78, SL 0.27, SI 76, PW 0.25, AL 0.57, ED 0.02, ML 0.23, DPW 0.18, PNI 73, PH 0.27, PNL 0.17, LPI 63. Head roughly rectangular, distinctly longer than broad, weakly narrowed forward. In full face view, occipital margin weakly emarginate, occipital corners roundly prominent, lateral sides weakly convex. Masticatory margin of mandible with 3 apical teeth and followed by a row of indistinct minute denticles. Anterior margin of clypeus evenly convex. Antennae short, apex of scape failed to reach occipital corner by 1/4 of its length, antennal club with 4 segments. Eye with only one facet. In profile view, dorsum of thorax weakly convex, promesonotal suture depressed, metanotal groove fine and distinct. Dorsum of propodeum as long as declivity, posterodorsal corner blunt. In profile view, petiolar node thick and nearly trapezoid, narrowed upward, anterior face steeper than posterior face, anterodorsal corner higher and more prominent, posterodorsal corner lower and more blunt. Subpetiolar process cuneiform, fenestra medium size, ventral face convex, anteroventral corner roundly blunt, posteroventral border without tooth. In dorsal view, anterior and lateral borders roundly convex, posterior border straight, length; width=8;9, almost as broad as long. Mandibles smooth and shining, with very sparse fine punctures. Head densely and finely punctured, relatively dull. Thorax, petiole and gaster weakly, densely and finely punctured, relatively shining. Dorsum of head and body with sparse subdecumbent hairs and dense decumbent pubescence, hairs on gaster abundant. Scapes with sparse subdecumbent hairs and dense decumbent pubescence. Dorsa of tibiae with dense decumbent pubescence, without erect hairs. The whole body yellow, gaster brownish yellow, eyes black.

Holotype: worker, No. A99-270, 2000 m, Daying Village, Jietou Town, Tengchong County, Yunnan Province, 02-V-1999, collected by Mr. Fu Lei in subalpine moist evergreen broadleaf forest.

This new species is close to *P. baka* Xu (Figs. 10~12), but in dorsal view petiolar node roughly triangular, as broad as long; in profile view subpetiolar process without tooth on posteroventral border.

Figs. 1~15 *Ponera* workers.

1-3. *P. alisana* Terayama; 4-6. *P. nangongshana* Xu; 7-9. *P. chiponensis* Terayama; 10-12. *P. baka* Xu; 13-15. *P. xantha*, sp. nov.; 1, 4, 7, 10, 13. head in full face view; 2, 5, 8, 11, 14. body in profile view; 3, 6, 9, 12, 15. petiolar node in dorsal view; 1-3, 7-9 after Terayama (1986); 4-6, 10-12 after Xu (2001)

2. *Ponera bawana*, sp. nov. (Figs. 19~21)

Holotype worker, TL 2.8, HL 0.67, HW 0.53, CI 80, SL 0.43, SI 87, PW 0.42,

AL 0.80, ED 0.03, ML 0.30, DPW 0.30, PNI 72, PH 0.40, PNL 0.20, LPI 50. Head roughly rectangular, distinctly longer than broad, weakly narrowed forward. In full face view, occipital margin nearly straight, occipital corners roundly prominent, lateral sides weakly convex. Masticatory margin of mandible with 3 apical teeth and followed by a row of indistinct minute denticles. Anterior margin of clypeus bluntly angled. Antennae short, apex of scape failed to reach occipital corner by 1/7 of its length, antennal club with 5 segments. Eye with 4 facets. In profile view, dorsum of thorax evenly convex, promesonotal suture depressed, metanotal groove distinct. Dorsum of propodeum slightly longer than declivity, posterodorsal corner rounded. In profile view, petiolar node trapezoid, narrowed upward, anterior and posterior faces straight, dorsal face evenly convex, anterodorsal and posterodorsal corners rounded and about at same level. Subpetiolar process cuneiform, fenestra small and circular, anteroventral corner obliquely truncate, posteroventral border with a minute blunt denticle. In dorsal view, petiolar node semicircular, anterior and lateral borders roundly convex, posterior border straight, length:width=1:2. Mandibles smooth and shining. Head closely and finely punctured, dull. Thorax densely and finely punctured, relatively shining. Petiole and gaster superficially, densely and finely punctured, shining. Dorsum of head and thorax with dense decumbent pubescence, without erect hairs. Petiolar node and gaster with sparse suberect hairs and dense decumbent pubescence. Scaepes with sparse suberect hairs and dense decumbent pubescence. Dorsa of tibiae with dense decumbent pubescence, without erect hairs. Head, propodeum and upper portion of petiole blackish brown. Pronotum, mesonotum, lower portion of petiole and gaster reddish brown. Mandibles, antennae and legs brownish yellow.

Paratype females: TL 3.5-3.6, HL 0.75-0.77, HW 0.60, CI 78-80, SL 0.50-0.52, SI 83-86, PW 0.57, AL 1.10, ED 0.20-0.22, ML 0.37-0.40, DPW 0.38, PNI 68, PH 0.50, PNL 0.23-0.25, LPI 47-50 (2 individuals measured). Similar to holotype, but with body much larger, eyes normal and large, with 3 ocelli; Mesothorax and metathorax complete and winged, the wings shedable, mesopleuron with a transverse furrow; In profile view petiolar node thinner; Color of body similar to holotype but head, propodeum and petiolar node black.

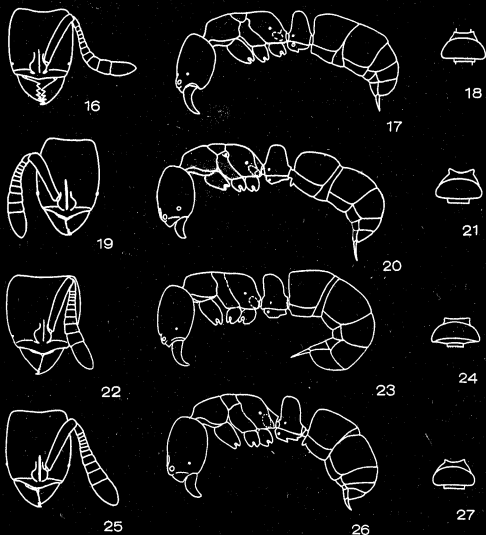
Holotype: worker, No. A98-2097, 1500 m, Bawan, Bawan Town, Baoshan City, Yunnan Province, 11-VI-1998, collected by Miss Long Qizhen in Yunnan pine forest. Paratypes: 2 females, with same data as holotype.

This new species is close to *P. japonica* Wheeler (Figs. 37~39), but in full face view lateral sides of head more straight, occipital corners more prominent; dorsum of propodeum longer than declivity; posteroventral border of subpetiolar process with only a minute denticle, fenestra small and circular.

3. *Ponera diodonta*, sp. nov. (Figs. 25~27)

Holotype worker: TL 2.5, HL 0.60, HW 0.50, CI 83, SL 0.43, SI 87, PW 0.38, AL 0.77, ED 0.02, ML 0.27, DPW 0.32, PNI 83, PH 0.43, PNL 0.20, LPI 46. Head roughly rectangular, longer than broad, weakly narrowed forward. In full face view, occipital margin weakly emarginate, occipital corners roundly prominent, lateral sides weakly convex. Masticatory margin of mandible with 3 apical teeth and followed by a row of indis-

tinct minute denticles. Anterior margin of clypeus evenly convex. Antennae short, apex of scape failed to reach occipital corner by $1/7$ of its length, antennal club with 5 segments.



Figs. 16~27. *Ponera* workers

16~18. *P. pentadontos* Xu; 19~21. *P. bawana*, sp. nov.; 22~24. *P. menglana* Xu; 25~27. *P. diodontia*, sp. nov.; 16, 19, 22, 25. head in full face view; 17, 20, 23, 26. body in profile view; 18, 21, 24, 27. petiolar node in dorsal view, 16~18, 22~24 after Xu (2001)

Eye with only one facet. In profile view, dorsum of thorax weakly convex, promesonotal suture depressed, metanotal groove fine and distinct. Dorsum of propodeum as long as declivity, posterodorsal corner rounded. In profile view, petiolar node roughly rectangular, slightly narrowed upward, anterior and posterior faces straight, dorsal face evenly convex, anterodorsal corner prominent and higher than posterodorsal corner, the latter rounded. Subpetiolar process cuneiform, fenestra small and circular, anteroventral corner rounded,

posteroventral border with 2 teeth. In dorsal view, petiolar node semicircular, anterior and lateral borders roundly convex, posterior border slightly concave, length:width = 5:9. Mandibles smooth and shining. Head closely and finely punctured, dull. Pronotum, mesonotum and gaster densely and finely punctured, relatively shining. Propodeum and petiolar node superficially and finely punctured, shining. Dorsum of head and thorax with sparse short erect hairs and dense decumbent pubescence. Petiolar node and gaster with abundant erect hairs and dense decumbent pubescence. Scapes with sparse erect hairs and dense decumbent pubescence. Dorsa of tibiae with dense decumbent pubescence, without erect hairs. Body in color reddish brown. Head and middle portion of gaster blackish brown. Mandibles, antennae and legs brownish yellow.

Holotype: worker, No. A008, 1600 m, Shangjiang, Shangjiang Town, Lushui County, Yunnan Province, 23-III-2000, collected by Mr. Xu Zhenghui in monsoon evergreen broadleaf forest.

This new species is close to *P. japonica* Wheeler (Figs. 37~39), but lateral sides of head more straight; in profile view anterodorsal corner of petiolar node higher than posterodorsal corner; subpetiolar process with fenestra small, posteroventral border with 2 teeth.

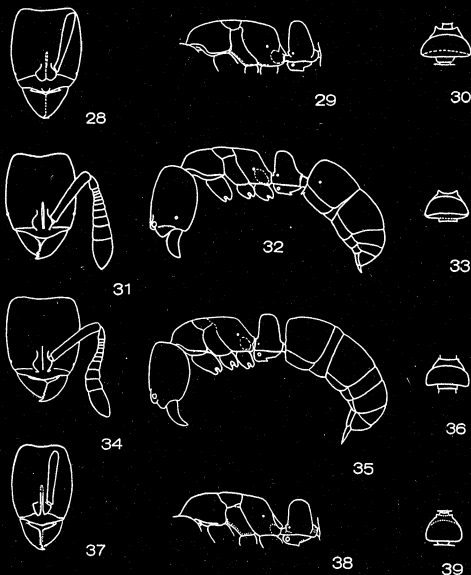
4. *Ponera pianmana*, sp. nov. (Figs. 31~33)

Holotype worker: TL 2.2, HL 0.52, HW 0.40, CI 77, SL 0.33, SI 83, PW 0.32, AL 0.67, ED 0.02, ML 0.23, DPW 0.25, PNI 79, PH 0.30, PNL 0.17, LPI 56. Head roughly rectangular, distinctly longer than broad, feebly narrowed forward. In full face view, occipital margin weakly emarginate, occipital corners roundly prominent, lateral sides weakly convex. Masticatory margin of mandible with 3 apical teeth and followed by a row of indistinct minute denticles. Anterior margin of clypeus strongly convex. Antennae short, apex of scape failed to reach occipital corner by 1/4 of its length, antennal club with 5 segments. Eye with only one facet. In profile view, dorsum of thorax weakly convex, promesonotal suture depressed, metanotal groove fine and distinct. Dorsum of propodeum as long as declivity, posterodorsal corner blunt. In profile view petiolar node trapezoid, distinctly narrowed upward, anterior face nearly vertical, posterior face steeply slope, dorsal face convex, anterodorsal corner higher than posterodorsal corner. Subpetiolar process cuneiform, fenestra medium size, anteroventral corner obliquely truncate, posteroventral border with an acute tooth. In dorsal view, petiolar node crescent, anterior and lateral borders roundly convex, posterior border weakly concave, length:width = 1:2. Mandibles smooth and shining, with very sparse fine punctures. Head densely and finely punctured, relatively dull. Thorax, petiole and gaster weakly, densely and finely punctured, relatively shining. Dorsum of head and thorax with dense decumbent pubescence, without erect hairs. Petiole and gaster with sparse suberect hairs and dense decumbent pubescence, apex of gaster with abundant hairs. Scapes with abundant suberect short hairs and dense decumbent pubescence. Dorsa of tibiae with dense decumbent pubescence, without erect hairs. Body in color brown, antennae and legs brownish yellow.

Holotype: worker, No. A99-47, 1650 m, Pianma, Pianma Town, Lushui County, Yunnan Province, 26-IV-1999, collected by Mr. Li Jiguai in monsoon evergreen broadleaf

forest.

This new species is close to *P. japonica* Wheeler (Figs. 37~39), but lateral sides of head more straight, only weakly convex; posterodorsal corner of propodeum more prominent, bluntly angled; in dorsal view petiolar node more broader, in profile view the node with anterodorsal corner higher than posterodorsal one.



Figs. 28~39 *Ponerinae* Workers

28~30. *P. sinensis* Wheeler; 31~33. *P. pianmana*, sp. nov.; 34~36. *P. longlina* Xu; 37~39. *P. japonica* Wheeler. 28, 31, 34, 37. head in full face view; 29, 32, 35, 38. body in profile view; 30, 33, 36, 39. petiolar node in dorsal view; 34~36 after Xu(2001); 28~30, 37~39 after Taylor (1967)

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云南猛蚁属四新种记述

(膜翅目: 蚁科)

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记述云南高黎贡山自然保护区猛蚁属4新种。至此已在中国记载猛蚁属昆虫12种: 中华猛蚁 *P. sinensis* Wheeler, 阿里山猛蚁 *P. alisana* Terayama, 知本猛蚁 *P. chiponensis* Terayama, 五齿猛蚁 *Ponera pentodontos* Xu, 勐腊猛蚁 *Ponera menglana* Xu, 南贡山猛蚁 *Ponera nangongshana* Xu, 龙林猛蚁 *Ponera longlina* Xu, 巴卡猛蚁 *Ponera baka* Xu, 黄色猛蚁 *Ponera xantha*, sp. nov., 坝湾猛蚁 *Ponera bawana*, sp. nov., 二齿猛蚁 *Ponera diodontia*, sp. nov., 片马猛蚁 *Ponera pianmana*, sp. nov.。编制了中国猛蚁属12种工蚁分种检索表并附插图。模式标本保存于西南林学院资源学院昆虫标本室。新种示差鉴别特征及模式标本情况如下:

1. 黄色猛蚁 *Ponera xantha*, 新种 (图13~15)

本新种近似巴卡猛蚁 *P. baka* Xu (图10~12), 但背面观腹柄结近三角形, 长宽相等; 侧面观腹柄下突后下缘无齿。

正模: 工蚁, No. A97-270, 云南省腾冲县界头乡大营, 2000 m, 1999-V-02, 付磊采于中山湿性常绿阔叶林内。

2. 坝湾猛蚁 *Ponera bawana*, 新种 (图19~21)

本新种近似日本猛蚁 *P. japonica* Wheeler (图37~39), 但头部正面观头侧缘较直, 后头角较突出; 并胸腹节背面长于斜面; 腹柄下突后下缘仅具1微小的齿, 窗孔小而圆。

正模: 工蚁, No. A98-2097, 云南省保山市坝湾乡坝湾, 1500 m, 1998-VIII-11, 龙启珍采于云南松林内。副模: 2雌蚁, 采集标记同正模。

3. 二齿猛蚁 *Ponera diodonta*, 新种 (图25~27)

本新种近似日本猛蚁 *P. japonica* Wheeler (图37~39), 但头侧缘较直; 侧面观腹柄结前上角高于后上角; 腹柄下突窗孔小, 后下缘具2齿。

正模: 工蚁, No. A008, 1600 m, 云南省泸水县上江乡上江, 2000-II-23, 徐正会采于季风常绿阔叶林内。

4. 片马猛蚁 *Ponera pianmana*, 新种 (图31~33)

本新种近似日本猛蚁 *P. japonica* Wheeler (图31~39), 但头侧缘较直, 仅轻度隆起; 并胸腹节后上角较突出, 呈钝角状; 背面观腹柄结较宽, 侧面观腹柄结前上角高于后上角。

正模: 工蚁, No. A99-47, 1650 m, 云南省泸水县片马镇片马, 1999-VI-26, 李继乖采于季风常绿阔叶林内。

关键词: 膜翅目; 蚁科; 猛蚁属; 新种; 系统分类; 云南